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Primary Productivity Measurements in the Chlorophyll Maximum in the Vicinity of the Mid-Atlantic Ridge, West of the Azores, from 8 July to 25 July 1982

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Canadian Data Report of Fisheries and Aquatic Sciences No. 402

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The correct citation appears above the abstract of each report.

Rapport statistique canadien des sciences halieutiques et aquatiques

Ces rapports servent de base à la compilation des données de classement et d'archives pour lesquelles il y a peu ou point d'analyse. Cette compilation aura d'ordinaire été préparée pour appuyer d'autres publications ou rapports. Les sujets des Rapports statistiques reflètent la vaste gamme des intérêts et politiques du Ministère des Pêches et des Océans, notamment gestion des pêches, techniques et développement, sciences océaniques et environnements aquatiques, au Canada.

Les numéros 1 à 25 de cette série ont été publiés à titre de Records statistiques, Service des pêches et de la mer. Les numéros 26-160 ont été publiés à titre de Rapports statistiques du Service des pêches et de la mer, Ministère des Pêches et de l'Environnement. Le nom de la série a été modifié à partir du numéro 161.

Le titre exact paraît au haut du résumé de chaque rapport.

Canadian Data Report of

Fisheries and Aquatic Sciences No. 402

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Primary Productivity Measurements in the Chlorophyll Maximum in the Vicinity of the Mid-Atlantic Ridge West of the Azores from 8 July to 25 July 1982

by

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ABSTRACT

Irwin, B., C. Caverhill, D.V. Subba Rao, C. Carver and T. Platt. 1983. Primary productivity measurements in the chlorophyll maximum in the vicinity of the Mid-Atlantic Ridge, west of the Azores, from 8 July to 25 July, 1982. Can. Data Rept. Fish. Aquat. Sci. No. 402: 84 p.

During the period 8 July to 25 July 1982 a series of primary productivity experiments and related nutrient measurements were made on CSS Hudson in the vicinity of the Mid-Atlantic ridge, west of the Azores. In this report we make available the raw data and the fitted light saturation parameters.

RÉSUMÉ

Irwin, B., C. Caverhill, D.V. Subba Rao, C. Carver and T. Platt. 1983. Primary productivity measurements in the chlorophyll maximum in the vicinity of the Mid-Atlantic Ridge, west of the Azores, from 8 July to 25 July, 1982. Can. Data Rept. Rish. Aquat. Sci. No. 402: 84 p.

Durant la période du 8 Juillet au 25 Juillet des séries d'expériences sur la determination de la production primaire et des sels nutritifs furent réalisées au bord du CSS Hudson du côte de la crête au milleau de l'atlantique à l'ouest des Azores. Nous presentons dans ce rapport les donneés brutes sur ces expériences, ainsi que les paramètres qui furent calculeés pour representer les courbes de production en fonction de la lumiere.

INTRODUCTION

This is the second in a series of data reports presenting the results of photosynthesis experiments on natural phytoplankton populations in the oligotrophic subtropical waters of the North Atlantic. In this study water samples were collected from CSS Hudson in the vicinity of the mid Atlantic ridge, west of the Azores. This was a joint effort between the Biological Oceanography Division of the Marine Ecology Laboratory, the Metrology Division of Atlantic Oceanographic Laboratory and Dalhousie University.

Sampling

The majority of water samples were collected from the chlorophyll maximum. This was located by in vivo fluorescence using a submersible pump and a Turner Design fluorometer. Water was then collected from this depth with the submersible pump. At all other stations, surface samples were collected with a plastic bucket.

A Guildline Model 87106 CTD as used to measure temperature and salinity to a depth of 200 m.

Size Fractionation

Most samples for light saturation experiments were separated into two or more size fractions. The whole fraction was collected by filtering unscreened water onto Whatman GF/F filters. The >1 µm fraction was collected on 1.0 µm Nuclepore filters using a negative vacuum pressure of 10KPa. The picoplankton fraction (<1 µm size) was that fraction of the whole population that passed through a 1.0 µm

Nuclepore filter at a negative pressure of 10 KPa and was collected on a Whatman GF/F filter.

Primary Productivity

The ^{14}C method described in Strickland and Parsons (1972) was used. Approximately 100 mls of sample water was decanted into 125 ml pyrex glass bottles. For experiments where the whole sample was collected 25 µci sodium bicarbonate ^{14}C was pipetted into each bottle. For all other samples 50 µci was added. For each experiment 40 light and 2 dark bottles were used. The bottles were placed in temperature controlled incubators (Forma Scientific Model 2160 circulating water baths). Illumination was provided by 2000 watt tungsten halogen lamps (New Haline OHS 2000).

All incubations were terminated after four hours and samples filtered immediately. Whole samples were collected directly on Whatman GF/F glass fibre filters. Many experiments were fractioned into >1 µm and <1 µm fractions. This was achieved by serially filtering samples through a 1.0 µm Nuclepore filter and a Whatman GF/F filter. In some experiments, the <1 µm fraction was separated from the whole population prior to incubation. Whole samples were prescreened through a Nuclepore stirred cell fitted with 1.0 µm filters. No suction was used, rather a positive pressure of 50 cm of water.

All samples were sucked dry, exposed to HCl fumes then counted immediately in a liquid scintillation counter.

Organic Particulates

Samples for organic particulates were collected and analysed using the methods described in Irwin et al. (1982). All chlorophylls were analysed on board. The remaining samples were stored at -20°C for later analysis.

DCMU Ratios

The in vivo fluorescence of whole samples and the <1 μm fraction was measured on a Turner Design fluorometer. 0.1 mls of the photosynthetic inhibitor 3-(3,4-dichlorophenyl)-1; 1 dimethylurea (D.C.M.U.) was added to 5 mls of sample and fluorescence measured. The instrument was set at zero using distilled water. The fluorescence blank was 0.2 μm filtered sea water that had been heated to 100°C for 2 minutes. The DCMU ratio

$$\frac{(+\text{DCMU Fluorescence} - \text{Blank}) - (\text{Fluorescence}-\text{Blank})}{(+\text{DCMU Fluorescence} - \text{blank})}$$

was calculated for all samples.

Nutrients

All nutrient samples were stored at -20°C for later analysis using methods described in Irwin et al. (1982).

Photosynthetic Parameters

Measurements of specific production, P^B, and irradiance, I, were used to estimate the parameters in the equation

$$P^B = P_s(1-e^{-\alpha I/P_s})e^{-\beta I/P_s}$$

(Platt et al. 1981) where P_s(mg C (mg Chl a)$^{-1}h^{-1}$) is the light saturated rate of photosynthesis in the absence of photoinhibition, α (mg C (mg Chl)$^{-1}h^{-1}w^{-1}m^{-2}$) is the initial slope of the P-I curve and β (same units as α) is a parameter that characterises photoinhibition. A complete discussion of the fitting routine and its mathematical basis is given in Irwin et al. (1980).

ACKNOWLEDGEMENTS

We wish to thank Dave Rudderham and Mark Hodgson for their assistance in the calculation of the light saturation parameters and analysis of nutrient samples respectively.

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Light Saturation Data and Fitted Parameters

SYMBOLS AND ABBREVIATONNS

P = mg C(mg Chl)$^{-1}$ m^{-3} h^{-1}

I = Watts m^{-2}

P_m = mg C (mg Chl)$^{-1}$h^{-1}

P_s = mg C (mg Chl)$^{-1}$h^{-1}

Alpha = mg C (mg Chl)$^{-1}$h^{-1}W^{-1}m^{-2}

Beta = mg C (mg Chl)$^{-1}$h^{-1}W^{-1}m^{-2}

organic particulates = mg m^{-3}

Inorganic nutrients = mg at m^{-3}

The 90% confidence intervals of parameter estimates are in closed brackets below parameter estimates.

AZORES 1982

STATION NO. 1 WHOLE SAMPLE DEPTH 0 M
LAT 36 29.2'N LONG 32 42.5'W DATE 08/07/82

I	P	I	P	I	P	I	P
697	7.11	665	6.12	558	6.66	486	8.13
398	7.08	334	6.89	299	5.97	287	5.63
235	4.69	215	5.25	191	4.31	163	3.58
143	3.79	139	3.25	103	2.86	97	2.34
94	2.96	77	1.62	69	1.47	68	1.61
56	.96	55	.81	41	.56	37	.88
29	.50	27	.47	20	.20	15	.19
14	.22	8	.05				

PARAMETER VALUES

PM : 7.17 ALPHA : .031

(6.47, 7.88) (.024, .038)

SAMPLE TEMPERATURE 22.6 C INCUBATION TEMPERATURE 23.0 C

CHLOROPHYLL	: .07	RNA	: 2.40	PROTEIN	: 32.00
CARBON	: 135	DNA	: 1.26	PHOSPHATE	: .38
NITROGEN	: 17	ATP	: .18	NITRATE	: .67
				SILICATE	: 1.54

AZORES 1982

STATION NO. 8 WHOLE SAMPLE DEPTH 87 M
LAT 36 25.8'N LONG 33 49.0'W DATE 12/07/82

I	P	I	P	I	P	I	P
259	.45	227	.50	219	.70	159	.94
155	.91	127	.82	99	.85	93	.94
89	.82	71	.92	65	.84	49	.95
33	.88	28	.87	27	.84	21	.78
21	.79	16	.70	15	.67	13	.85
11	.74	10	.78	8	.50	7	.37
6	.36	6	.27	5	.28	5	.18
4	.18	3	.12	3	.13	3	.25
2	.10	2	.28	2	.07		

PARAMETER VALUES

PS : 1.14	ALPHA : .073	BETA : .0030
(1.04, 1.23)	(.066, .079)	(.0020, .0040)

SAMPLE TEMPERATURE 17.3 C INCUBATION TEMPERATURE 17.1 C

CHLOROPHYLL :	.48	RNA :	3.24	PROTEIN :	54.00
CARBON :	135	DNA :	1.74	PHOSPHATE :	.27
NITROGEN :	32	ATP :	-	NITRATE :	1.83
				SILICATE :	1.19

AZORES 1982

STATION NO. 8 >1U FRACTION DEPTH 87 M
LAT 36 25.8'N LONG 33 49.0'W DATE 12/07/82

I	P	I	P	I	P	I	P
155	.18	147	.20	119	.22	101	.21
97	.23	75	.28	67	.23	65	.24
55	.24	49	.31	41	.29	37	.29
33	.23	27	.30	26	.20	21	.23
21	.19	16	.19	16	.15	12	.16
12	.10	9	.14	9	.09	7	.06
7	.09	5	.07	5	.05	4	.04
3	.03	3	.01	3	.05		

PARAMETER VALUES

PS : .48	ALPHA : .015	BETA : .0032
(.35, .62)	(.013, .016)	(.0012, .0052)

SAMPLE TEMPERATURE 17.3 C INCUBATION TEMPERATURE 17.8 C

CHLOROPHYLL :	.24	RNA :	-	PROTEIN :	-
CARBON :	-	DNA :	-	PHOSPHATE :	.27
NITROGEN :	-	ATP :	.14	NITRATE :	1.83
				SILICATE :	1.19

AZORES 1982

STATION NO. 8 <1U FRACTION DEPTH 87 M
LAT 36 25.8'N LONG 33 49.0'W DATE 12/07/82

I	P	I	P	I	P	I	P
155	.06	147	.28	119	.14	101	.41
97	.53	75	.69	67	.37	65	.80
55	.46	49	.73	41	.55	37	.59
33	.88	27	.80	26	.66	21	.83
16	.48	12	.52	12	.46	9	.42
9	.39	7	.34	7	.48	5	.24
5	.26	4	.20	3	.09	3	.16

PARAMETER VALUES

PS :	1.77	ALPHA :	.059	BETA :	.0264
(	.74, 2.80)	(	.051, .066)	(	.0011, .0516)

SAMPLE TEMPERATURE 17.3 C INCUBATION TEMPERATURE 17.8 C

CHLOROPHYLL :	.18	RNA :	-	PROTEIN :	-
CARBON :	-	DNA :	-	PHOSPHATE :	.27
NITROGEN :	-	ATP :	.12	NITRATE :	1.83
				SILICATE :	1.19

AZORES 1982

STATION NO. 9 WHOLE SAMPLE DEPTH 75 M
LAT 36 45.0'N LONG 33 17.0'W DATE 13/07/82

I	P	I	P	I	P	I	P
251	.08	231	.08	211	.14	163	.13
155	.13	131	.16	111	.17	101	.16
98	.18	82	.20	73	.20	67	.23
60	.23	53	.17	50	.21	46	.19
40	.18	33	.21	23	.19	17	.18
13	.15	8	.11	5	.04	3	.06
2	.05	2	.08	2	.01		

PARAMETER VALUES

PS :	ALPHA :	BETA :
.27	.016	.0012
(.25, .30)	(.014, .018)	(.0009, .0015)

SAMPLE TEMPERATURE 16.6 C INCUBATION TEMPERATURE 17.5 C

CHLOROPHYLL :	.47	RNA :	3.24	PROTEIN :	38.50
CARBON :	133	DNA :	.78	PHOSPHATE :	.46
NITROGEN :	32	ATP :	.13	NITRATE :	2.10
				SILICATE :	1.26

AZORES 1982

STATION NO. 9 >1U FRACTION DEPTH 75 M
LAT 36 45.0'N LONG 33 17.0'W DATE 13/07/82

I	P	I	P	I	P	I	P
239	.10	219	.12	215	.11	155	.18
139	.18	135	.18	99	.19	89	.20
75	.22	71	.24	61	.25	51	.25
49	.21	45	.24	36	.20	36	.23
27	.22	27	.22	21	.20	15	.17
15	.19	11	.15	11	.12	8	.11
8	.09	6	.09	5	.08	5	.05
4	.04	3	.03	3	.03	2	.02
2	.01	2	.02	2	.02	1	.01
1	.00						

PARAMETER VALUES

PS :	.35	ALPHA :	.015	BETA :	.0018
(	.32, .38)	(	.014, .015)	(	.0014, .0021)

SAMPLE TEMPERATURE 16.6 C INCUBATION TEMPERATURE 16.5 C

CHLOROPHYLL :	.26	RNA :	-	PROTEIN :	-
CARBON :	-	DNA :	-	PHOSPHATE :	.46
NITROGEN :	-	ATP :	.08	NITRATE :	2.10
				SILICATE :	1.26

AZORES 1982

STATION NO. 9 <1U FRACTION DEPTH 75 M
LAT 36 45.0'N LONG 33 17.0'W DATE 13/07/82

T	P	I	P	I	P	I	P
239	.04	219	.15	215	.10	139	.15
135	.12	99	.19	95	.23	89	.21
75	.20	71	.22	61	.21	51	.20
49	.26	45	.30	36	.19	36	.23
27	.31	27	.22	21	.23	19	.23
15	.22	15	.15	11	.18	11	.15
8	.19	8	.16	6	.19	5	.11
5	.10	4	.10	3	.07	3	.07
2	.03	2	.04	2	.04	2	.14
1	.06						

PARAMETER VALUES

PS : .32 ALPHA : .026 BETA : .0017

(.29, .35) (.023, .029) (.0012, .0022)

SAMPLE TEMPERATURE 16.6 C INCUBATION TEMPERATURE 16.5 C

CHLOROPHYLL :	.13	RNA :	-	PROTEIN :	-
CARBON :	-	DNA :	-	PHOSPHATE :	.46
NITROGEN :	-	ATP :	.08	NITRATE :	2.10
				SILICATE :	1.26

AZORES 1982

STATION NO. 10 WHOLE SAMPLE DEPTH 87 M
LAT 36 22.6'N LONG 33 44.6'W DATE 14/07/82

I	P	I	P	I	P	I	P
231	.21	223	.12	191	.21	151	.23
127	.27	123	.36	93	.37	90	.37
82	.38	66	.48	60	.51	48	.45
45	.49	43	.48	36	.48	35	.49
27	.48	25	.53	21	.46	19	.52
13	.49	12	.41	10	.37	9	.31
8	.28	6	.26	6	.26	4	.16
4	.23	3	.15	3	.11	3	.17
3	.20	2	.09	2	.13	1	.07
1	.04	1	.04				

PARAMETER VALUES

PS :	ALPHA :	BETA :
.69	.053	.0045
(.65, .72)	(.050, .055)	(.0038, .0051)

SAMPLE TEMPERATURE 17.1 C INCUBATION TEMPERATURE 17.0 C

CHLOROPHYLL :	.39	RNA :	3.50	PROTEIN :	42.70
CARBON :	100	DNA :	1.19	PHOSPHATE :	.25
NITROGEN :	14	ATP :	.22	NITRATE :	.16
				SILICATE :	.84

AZORES 1982

STATION NO. 10 >1U FRACTION DEPTH 87 M
LAT 36 22.6'N LONG 33 44.6'W DATE 14/07/82

I	P	I	P	I	P	I	P
203	.21	183	.31	175	.27	135	.37
117	.43	109	.36	91	.39	85	.43
73	.44	59	.43	55	.50	51	.53
43	.54	39	.48	37	.46	32	.43
29	.47	23	.51	23	.41	17	.42
17	.39	13	.33	13	.30	10	.37
9	.21	8	.31	7	.24	6	.15
5	.23	4	.12	4	.10	4	.09
3	.06	3	.10	2	.04	2	.07
2	.01	2	.02	1	.03		

PARAMETER VALUES

PS :	.69	ALPHA :	.036	BETA :	.0035
(	.63, .75)	(	.034, .039)	(	.0027, .0044)

SAMPLE TEMPERATURE 17.1 C INCUBATION TEMPERATURE 17.5 C

CHLOROPHYLL :	.19	RNA :	-	PROTEIN :	-
CARBON :	-	DNA :	-	PHOSPHATE :	.25
NITROGEN :	-	ATP :	.17	NITRATE :	.16
				SILICATE :	.84

AZORES 1982

STATION NO. 10 <10 FRACTION DEPTH 87 M
LAT 36 22.6'N LONG 33 44.6'W DATE 14/07/82

I	P	I	P	I	P	I	P
203	.16	183	.33	175	.34	135	.47
117	.52	109	.52	91	.64	85	.64
73	.66	59	.72	55	.73	51	.66
43	.72	39	.84	37	.76	32	.81
29	.85	23	.60	23	.84	17	.64
17	.71	13	.46	13	.40	10	.45
9	.39	8	.33	7	.38	6	.35
5	.26	4	.25	4	.22	4	.19
3	.09	3	.19	2	.12	2	.10
2	.03	2	.07	1	.05	1	.08

PARAMETER VALUES

PS : 1.32 ALPHA : .057 BETA : .0108

(1.17, 1.47) (.053, .060) (.0082, .0134)

SAMPLE TEMPERATURE 17.1 C INCUBATION TEMPERATURE 17.5 C

CHLOROPHYLL :	.18	RNA :	-	PROTEIN :	-
CARBON :	-	DNA :	-	PHOSPHATE :	.25
NITROGEN :	-	ATP :	.07	NITRATE :	.16
				SILICATE :	.84

AZORES 1982

STATION NO. 11 WHOLE SAMPLE DEPTH 84 M
LAT 36 25.0'N LONG 33 15.0'W DATE 15/07/82

I	P	I	P	I	P	I	P
195	.08	175	.12	131	.15	123	.14
111	.14	96	.15	89	.21	83	.18
66	.20	65	.17	60	.17	49	.25
48	.24	47	.23	39	.24	37	.22
28	.23	28	.21	22	.26	21	.27
17	.25	15	.26	13	.20	12	.21
9	.19	9	.18	7	.13	6	.10
5	.12	5	.08	4	.11	4	.09
3	.05	3	.05	2	.03	2	.05
?	.04	2	.02	1	.02		

PARAMETER VALUES

PS : .33	ALPHA : .027	BETA : .0023
(.30, .36)	(.025, .029)	(.0018, .0029)

SAMPLE TEMPERATURE 17.5 C INCUBATION TEMPERATURE 17.3 C

CHLOROPHYLL :	.49	RNA :	2.66	PROTEIN :	40.40
CARBON :	85	DNA :	1.84	PHOSPHATE :	.15
NITROGEN :	25	ATP :	.25	NITRATE :	.45
				SILICATE :	1.06

AZORES 1982

STATION NO. 11 >1U FRACTION DEPTH 84 M
LAT 36 25.0'N LONG 33 15.0'W DATE 15/07/82

I	P	I	P	I	P	I	P
235	.13	207	.20	195	.17	143	.24
123	.26	123	.28	97	.29	89	.29
85	.33	71	.33	67	.33	61	.35
49	.39	49	.34	43	.35	36	.38
34	.35	26	.40	26	.36	19	.30
19	.34	13	.27	13	.27	10	.25
10	.22	7	.19	7	.20	5	.13
5	.12	4	.08	3	.10	3	.04
2	.04	2	.02	2	.02	2	.02
1	.00	1	.01				

PARAMETER VALUES

PS :	ALPHA :	BETA :
.51	.030	.0027
(.48, .54)	(.028, .031)	(.0022, .0032)

SAMPLE TEMPERATURE 17.5 C INCUBATION TEMPERATURE 17.3 C

CHLOROPHYLL :	.22	RNA :	-	PROTEIN :	-
CARBON :	-	DNA :	-	PHOSPHATE :	.15
NITROGEN :	-	ATP :	.14	NITRATE :	.45
				SILICATE :	1.06

AZORES 1982

STATION NO. 11 <1U FRACTION DEPTH 84 M
LAT 36 25.0'N LONG 33 15.0'W DATE 15/07/82

I	P	I	P	I	P	I	P
235	.04	207	.09	195	.13	143	.15
123	.15	123	.18	97	.28	89	.28
85	.33	71	.33	67	.35	61	.39
49	.43	49	.50	43	.43	36	.47
34	.42	26	.46	26	.46	19	.46
19	.52	13	.44	13	.49	10	.48
10	.41	7	.33	7	.36	5	.34
5	.31	4	.28	4	.25	3	.24
3	.18	2	.14	2	.16	2	.11
2	.10	1	.07	1	.08	1	.07

PARAMETER VALUES

PS : .69 ALPHA : .072 BETA : .0069

(.65, .72) (.069, .076) (.0060, .0078)

SAMPLE TEMPERATURE 17.5 C INCUBATION TEMPERATURE 17.3 C

CHLOROPHYLL	: .21	RNA	: -	PROTEIN	: -
CARBON	: -	DNA	: -	PHOSPHATE	: .15
NITROGEN	: -	ATP	: .09	NITRATE	: .45
				SILICATE	: 1.06

AZORES 1982

STATION NO. 12 WHOLE SAMPLE DEPTH 68 M
LAT 36 25.0'N LONG 34 15.0'W DATE 16/07/82

I	P	I	P	I	P	I	P
235	.37	199	.47	179	.48	143	.57
135	.51	111	.62	101	.73	81	.67
79	.76	71	.71	65	.73	59	.79
51	.75	51	.80	45	.82	41	.88
35	.86	28	.85	27	.91	24	.78
21	.65	17	.70	15	.65	13	.56
12	.60	10	.47	9	.53	7	.30
7	.35	5	.27	5	.24	4	.18
4	.22	3	.13	3	.11	3	.11
2	.10	2	.08	2	.09	2	.06

PARAMETER VALUES

PS : 1.12 ALPHA : .063 BETA : .0056

(1.05, 1.19) (.059, .066) (.0046, .0066)

SAMPLE TEMPERATURE 16.8 C INCUBATION TEMPERATURE 17.3 C

CHLOROPHYLL	: .68	RNA	: 4.29	PROTEIN	: 128.40
CARBON	: 135	DNA	: 4.16	PHOSPHATE	: .32
NITROGEN	: 28	ATP	: .37	NITRATE	: 1.19
				SILICATE	: 1.04

AZORES 1982

STATION NO. 12 >1U FRACTION DEPTH 68 M
LAT 36 25.0'N LONG 34 15.0'W DATE 16/07/82

I	P	I	P	I	P	I	P
231	.54	203	.64	199	.61	147	.73
131	.81	131	.78	99	.85	93	.88
91	.92	67	.89	65	.85	63	.90
49	.87	47	.85	39	.83	37	.91
32	.92	27	.89	27	.73	21	.69
19	.65	15	.56	13	.52	11	.46
10	.34	10	.43	7	.31	6	.25
6	.23	5	.18	4	.17	3	.12
3	.14	2	.08	2	.08	2	.05
2	.06	1	.04	1	.06	1	.05

PARAMETER VALUES

PS : 1.26 ALPHA : .049 BETA : .0045

(1.19, 1.34) (.047, .051) (.0037, .0053)

SAMPLE TEMPERATURE 16.8 C INCUBATION TEMPERATURE 17.5 C

CHLOROPHYLL :	.41	RNA :	-	PROTEIN :	-
CARBON :	-	DNA :	-	PHOSPHATE :	.32
NITROGEN :	-	ATP :	.12	NITRATE :	1.19
				SILICATE :	1.04

AZORES 1982

STATION NO. 12 <1U FRACTION DEPTH 68 M
LAT 36 25.0'N LONG 34 15.0'W DATE 16/07/82

I	P	I	P	I	P	I	P
231	.16	203	.27	199	.25	147	.42
131	.49	131	.43	99	.52	93	.49
67	.58	65	.57	63	.55	49	.61
47	.63	39	.71	37	.70	32	.69
27	.68	27	.72	21	.68	19	.74
15	.64	13	.62	11	.57	10	.50
10	.60	7	.48	6	.40	6	.42
5	.34	4	.29	3	.22	3	.26
2	.19	2	.16	2	.13	2	.12
1	.10	1	.08	1	.06		

PARAMETER VALUES

PS :	ALPHA :	BETA :
.89	.084	.0054
(.85, .93)	(.081, .088)	(.0048, .0059)

SAMPLE TEMPERATURE 16.8 C INCUBATION TEMPERATURE 17.5 C

CHLOROPHYLL :	.25	RNA :	2.93	PROTEIN :	8.90
CARBON :	76	DNA :	.45	PHOSPHATE :	.32
NITROGEN :	15	ATP :	.04	NITRATE :	1.19
				SILICATE :	1.04

AZORES 1982

STATION NO. 13 WHOLE SAMPLE DEPTH 87 M
LAT 36 25.6'N LONG 33 52.3'W DATE 17/07/82

I	P	I	P	I	P	I	P
223	.13	191	.15	167	.17	123	.21
115	.24	95	.25	83	.23	71	.30
63	.31	61	.26	51	.31	47	.31
39	.32	39	.35	27	.34	27	.34
21	.34	21	.36	16	.32	16	.30
12	.28	11	.26	8	.23	8	.22
7	.23	6	.19	5	.13	5	.12
4	.09	4	.07	3	.07	3	.05
2	.03	2	.03	2	.02	2	.02
1	.04						

PARAMETER VALUES

PS : .46 ALPHA : .033 BETA : .0029

(.42, .50) (.031, .035) (.0023, .0035)

SAMPLE TEMPERATURE 16.9 C INCUBATION TEMPERATURE 17.2 C

CHLOROPHYLL	.60	RNA	2.35	PROTEIN	43.70
CARBON	72	DNA	3.34	PHOSPHATE	.11
NITROGEN	25	ATP	.29	NITRATE	1.38
				SILICATE	1.26

AZORES 1982

STATION NO. 13 >1U FRACTION DEPTH 87 M
LAT 36 25.6'N LONG 33 52.3'W DATE 17/07/82

I	P	I	P	I	P	I	P
231	.28	203	.31	147	.35	131	.35
131	.41	99	.46	93	.53	91	.50
67	.57	65	.53	63	.58	49	.62
47	.61	39	.63	37	.60	32	.58
27	.61	27	.58	21	.60	19	.57
15	.53	13	.49	11	.46	10	.40
10	.44	7	.35	6	.30	6	.30
5	.23	4	.21	3	.17	3	.18
2	.13	2	.13	2	.10	2	.08
1	.06	1	.06	1	.05		

PARAMETER VALUES

PS	ALPHA	BETA
.80	.059	.0042
(.78, .83)	(.057, .060)	(.0037, .0046)

SAMPLE TEMPERATURE 16.9 C INCUBATION TEMPERATURE 17.3 C

CHLOROPHYLL	.26	RNA	-	PROTEIN	-
CARBON	-	DNA	-	PHOSPHATE	.11
NITROGEN	-	ATP	.12	NITRATE	1.38
				SILICATE	1.26

AZORES 1982

STATION NO. 13 <10 FRACTION DEPTH 87 M
LAT 36 25.6'N LONG 33 52.3'W DATE 17/07/82

I	P	I	P	I	P	I	P
231	.10	203	.20	199	.14	147	.29
131	.31	131	.35	99	.44	93	.47
91	.57	67	.61	65	.58	63	.57
49	.57	47	.63	39	.60	37	.61
32	.69	27	.59	27	.67	21	.64
19	.72	15	.65	13	.62	11	.48
10	.36	10	.52	7	.41	6	.50
6	.38	5	.31	4	.29	3	.23
3	.22	2	.18	2	.16	2	.14
2	.19	1	.15	1	.14	1	.10

PARAMETER VALUES

PS : .92 ALPHA : .078 BETA : .0071

(.87, .98) (.073, .082) (.0060, .0082)

SAMPLE TEMPERATURE 16.9 C INCUBATION TEMPERATURE 17.3 C

CHLOROPHYLL	: .23	RNA	: 1.65	PROTEIN	: 12.70
CARBON	: 52	DNA	: .78	PHOSPHATE	: .11
NITROGEN	: 12	ATP	: .08	NITRATE	: 1.38
				SILICATE	: 1.26

AZORES 1982

STATION NO. 14 WHOLE SAMPLE DEPTH 78 M
LAT 36 25.0'N LONG 33 30.0'W DATE 17/07/82

I	P	I	P	I	P	I	P
207	.18	187	.20	183	.34	135	.25
127	.31	123	.28	97	.42	85	.35
85	.41	69	.36	65	.40	61	.37
49	.43	47	.37	47	.44	37	.45
34	.42	27	.47	27	.41	21	.47
21	.44	15	.43	15	.37	12	.35
11	.37	9	.33	8	.37	6	.32
6	.24	5	.16	4	.23	4	.18
4	.19	3	.16	3	.09	2	.12
2	.10	2	.15	2	.05	1	.02

PARAMETER VALUES

PS : .53 ALPHA : .056 BETA : .0022

(.50, .55) (.052, .060) (.0018, .0027)

SAMPLE TEMPERATURE 17.5 C INCUBATION TEMPERATURE 18.0 C

CHLOROPHYLL	: .34	RNA	: 3.66	PROTEIN	: 47.00
CARBON	: 100	DNA	: 1.40	PHOSPHATE	: .15
NITROGEN	: 27	ATP	: .24	NITRATE	: 1.09
				SILICATE	: 1.03

AZORES 1982

STATION NO. 14 >1U FRACTION DEPTH 78 M
LAT 36 25.0'N LONG 33 30.0'W DATE 17/07/82

I	P	I	P	I	P	I	P
223	.22	199	.20	195	.22	123	.33
119	.30	99	.27	95	.32	81	.36
69	.34	59	.45	38	.40	31	.38
28	.37	26	.44	21	.34	20	.41
15	.33	14	.30	11	.24	10	.27
8	.25	8	.20	6	.20	6	.15
5	.15	4	.10	4	.11	3	.08
3	.08	2	.05	2	.04	2	.02
2	.07	2	.01	1	.02		

PARAMETER VALUES

PS : .55 ALPHA : .032 BETA : .0027

(.50, .59) (.030, .034) (.0021, .0033)

SAMPLE TEMPERATURE 17.5 C INCUBATION TEMPERATURE 18.0 C

CHLOROPHYLL :	.24	RNA :	-	PROTEIN :	-
CARBON :	-	DNA :	-	PHOSPHATE :	.15
NITROGEN :	-	ATP :	.03	NITRATE :	1.09
				SILICATE :	1.03

AZORES 1982

STATION NO. 14 <1U FRACTION DEPTH 78 M
LAT 36 25.0'N LONG 33 30.0'W DATE 17/07/82

I	P	I	P	I	P	I	P
223	.11	199	.18	195	.18	123	.43
119	.40	99	.40	95	.52	95	.40
81	.66	69	.69	67	.48	59	.51
51	.70	49	.56	43	.67	38	.85
31	.77	28	.91	26	.91	21	.80
20	.69	15	.55	14	.64	11	.56
10	.50	8	.55	8	.54	6	.41
6	.39	5	.29	4	.30	4	.28
3	.23	3	.18	2	.22	2	.14
2	.11	2	.08	2	.04	1	.06

PARAMETER VALUES

PS : 1.23 ALPHA : .077 BETA : .0123

(1.09, 1.37) (.071, .083) (.0092, .0155)

SAMPLE TEMPERATURE 17.5 C INCUBATION TEMPERATURE 18.0 C

CHLOROPHYLL	: .14	RNA	: 2.22	PROTEIN	: 29.30
CARBON	: 55	DNA	: .48	PHOSPHATE	: .15
NITROGEN	: 35	ATP	: .05	NITRATE	: 1.09
				SILICATE	: 1.03

AZORES 1982

STATION NO. 15 WHOLE SAMPLE DEPTH 73 M
LAT 36 0.0'N LONG 34 12.0'W DATE 19/07/82

I	P	I	P	I	P	I	P
215	.29	191	.21	183	.34	139	.27
119	.38	93	.37	81	.41	75	.37
61	.36	45	.42	43	.43	41	.37
38	.42	32	.40	25	.39	24	.37
19	.36	18	.37	13	.33	10	.31
9	.32	7	.31	7	.24	6	.16
6	.19	5	.15	4	.14	3	.15
3	.10	3	.07	2	.09	2	.03
2	.06	1	.04	1	.03		

PARAMETER VALUES

PS : .47 ALPHA : .041 BETA : .0013

(.44, .50) (.038, .044) (.0010, .0016)

SAMPLE TEMPERATURE 17.6 C INCUBATION TEMPERATURE 17.0 C

CHLOROPHYLL :	.82	RNA :	5.03	PROTEIN :	44.40
CARBON :	90	DNA :	3.99	PHOSPHATE :	.19
NITROGEN :	25	ATP :	.29	NITRATE :	1.79
				SILICATE :	1.15

AZORES 1982

STATION NO. 15 >1U FRACTION DEPTH 73 M
LAT 36 0.0'N LONG 34 12.0'W DATE 19/07/82

I	P	I	P	I	P	I	P
223	.35	207	.40	179	.46	147	.48
135	.51	115	.47	97	.58	91	.56
81	.62	69	.59	65	.59	59	.65
49	.68	47	.60	45	.62	37	.61
35	.61	28	.57	26	.62	19	.51
14	.46	10	.37	10	.38	8	.29
8	.22	6	.21	6	.18	5	.13
5	.16	4	.11	4	.11	3	.08
3	.07	2	.04	2	.06	2	.03
2	.01	1	.04				

PARAMETER VALUES

PS :	ALPHA :	BETA :
.86	.039	.0034
(.80, .91)	(.037, .041)	(.0027, .0041)

SAMPLE TEMPERATURE 17.6 C INCUBATION TEMPERATURE 18.0 C

CHLOROPHYLL :	.38	RNA :	-	PROTEIN :	-
CARBON :	-	DNA :	-	PHOSPHATE :	.19
NITROGEN :	-	ATP :	-	NITRATE :	1.79
				SILICATE :	1.15

AZORES 1982

STATION NO. 15 <1U FRACTION DEPTH 73 M
LAT 36 0.0'N LONG 34 12.0'W DATE 19/07/82

I	P	I	P	I	P	I	P
223	.20	207	.35	179	.34	147	.47
135	.46	115	.47	97	.57	91	.64
81	.58	69	.69	65	.59	59	.58
49	.73	47	.84	45	.68	37	.75
35	.70	28	.75	26	.77	20	.66
19	.70	14	.65	14	.61	10	.56
10	.61	8	.49	8	.48	6	.43
6	.37	5	.31	5	.31	4	.25
4	.29	3	.23	3	.22	2	.15
2	.17	2	.09	2	.09	1	.13

PARAMETER VALUES

PS : .96 ALPHA : .079 BETA : .0054

(.92, 1.01) (.075, .082) (.0047, .0061)

SAMPLE TEMPERATURE 17.6 C INCUBATION TEMPERATURE 18.0 C

CHLOROPHYLL : .32 RNA : 2.23 PROTEIN : 20.80

CARBON : 62 DNA : 2.33 PHOSPHATE : .19

NITROGEN : 17 ATP : .10 NITRATE : 1.79

SILICATE : 1.15

AZORES 1982

STATION NO. 16 WHOLE SAMPLE DEPTH 61 M
LAT 36 25.0'N LONG 34 15.0'W DATE 19/07/82

I	P	I	P	I	P	I	P
207	.16	183	.20	167	.22	127	.34
115	.41	109	.37	81	.40	77	.41
75	.47	59	.49	57	.54	51	.49
43	.45	41	.50	37	.57	31	.46
27	.40	22	.47	22	.57	16	.54
16	.46	11	.39	8	.35	6	.25
6	.26	5	.20	5	.24	4	.16
4	.14	3	.09	3	.13	2	.07
2	.06	2	.06	2	.07	1	.05
1	.03	1	.01				

PARAMETER VALUES

PS : .74 ALPHA : .046 BETA : .0050

(.68, .81) (.043, .050) (.0038, .0061)

SAMPLE TEMPERATURE 17.5 C INCUBATION TEMPERATURE 17.5 C

CHLOROPHYLL	: .74	RNA	: 3.78	PROTEIN	: 41.80
CARBON	: 90	DNA	: 3.21	PHOSPHATE	: .22
NITROGEN	: 19	ATP	: .37	NITRATE	: 1.92
				SILICATE	: 1.33

AZORES 1982

STATION NO. 17 WHOLE SAMPLE DEPTH 88 M
LAT 37 10.0'N LONG 38 41.0'W DATE 20/07/82

I	P	I	P	I	P	I	P
207	.21	187	.25	167	.30	127	.39
115	.31	107	.42	88	.48	81	.51
73	.55	57	.53	55	.62	53	.54
46	.62	39	.51	38	.66	33	.67
27	.62	24	.63	22	.64	17	.62
16	.52	13	.48	12	.43	10	.33
10	.36	7	.29	7	.30	6	.18
6	.19	5	.43	4	.17	3	.08
3	.09	3	.05	3	.05	2	.08
2	.02	1	.00	1	.00		

PARAMETER VALUES

PS :	ALPHA :	BETA :
.99	.050	.0079
(.86, 1.13)	(.046, .054)	(.0055, .0104)

SAMPLE TEMPERATURE 17.5 C INCUBATION TEMPERATURE 18.0 C

CHLOROPHYLL :	.54	RNA :	4.45	PROTEIN :	51.70
CARBON :	100	DNA :	4.38	PHOSPHATE :	.13
NITROGEN :	37	ATP :	.26	NITRATE :	.30
				SILICATE :	.89

AZORES 1982

STATION NO. 17 >1U FRACTION DEPTH 88 M
LAT 37 10.0'N LONG 38 41.0'W DATE 20/07/82

I	P	I	P	I	P	I	P
227	.24	207	.25	199	.31	155	.36
147	.36	123	.50	103	.43	101	.46
91	.49	73	.46	73	.58	65	.52
53	.56	51	.51	49	.52	38	.51
35	.57	27	.48	25	.50	20	.54
19	.52	16	.45	15	.44	11	.41
11	.35	9	.28	8	.27	6	.21
6	.22	5	.17	5	.16	4	.12
3	.09	3	.09	3	.05	2	.04
2	.04	2	.11	2	.01	1	.02

PARAMETER VALUES

PS :	ALPHA :	BETA :
.77	.040	.0038
(.71, .82)	(.038, .043)	(.0030, .0046)

SAMPLE TEMPERATURE 17.5 C INCUBATION TEMPERATURE 18.0 C

CHLOROPHYLL :	.23	RNA :	-	PROTEIN :	-
CARBON :	-	DNA :	-	PHOSPHATE :	.13
NITROGEN :	-	ATP :	.19	NITRATE :	.30
				SILICATE :	.89

AZORES 1982

STATION NO. 17 <10 FRACTION DEPTH 88 M
LAT 37 10.0'N LONG 38 41.0'W DATE 20/07/82

T	P	T	P	I	P	I	P
227	.19	207	.24	199	.39	155	.54
147	.58	123	.75	103	.79	101	.84
91	.86	73	.88	73	.95	65	.87
53	.86	51	1.01	49	.94	38	.99
35	.95	27	1.02	25	.98	20	.88
19	.95	16	1.04	15	.85	11	.77
11	.65	9	.55	8	.64	6	.44
6	.49	5	.31	5	.39	4	.33
3	.30	3	.26	3	.26	2	.20
2	.14	2	.17	2	.06	1	.06

PARAMETER VALUES

PS :	1.51	ALPHA :	.088	BETA :	.0105
(1.41,	1.62)	(.083,	.092)	(.0087,	.0122)

SAMPLE TEMPERATURE 17.5 C INCUBATION TEMPERATURE 18.0 C

CHLOROPHYLL :	.26	RNA :	2.22	PROTEIN :	22.60
CARBON :	59	DNA :	.87	PHOSPHATE :	.13
NITROGEN :	17	ATP :	.08	NITRATE :	.30
				SILICATE :	.89

AZORES 1982

STATION NO. 17 <1U PREFRACTIONED DEPTH 88 M
LAT 37 10.0'N LONG 38 41.0'W DATE 20/07/82

I	P	I	P	I	P	I	P
207	.16	187	.10	167	.11	127	.18
115	.18	107	.24	88	.27	81	.31
73	.26	57	.25	55	.30	53	.38
46	.29	39	.31	38	.37	33	.50
27	.43	24	.41	22	.32	17	.42
16	.39	13	.38	12	.26	10	.32
10	.30	7	.38	7	.33	6	.24
6	.37	5	.30	4	.18	3	.19
3	.22	3	.20	3	.21	2	.20
2	.18	2	.15	1	.18	1	.11

PARAMETER VALUES

PS :	.46	ALPHA :	.079	BETA :	.0032
(.43,	.49)	(.072,	.087)	(.0025,	.0038)

SAMPLE TEMPERATURE 17.5 C INCUBATION TEMPERATURE 18.0 C

CHLOROPHYLL :	.26	RNA :	2.22	PROTEIN :	22.60
CARBON :	59	DNA :	.87	PHOSPHATE :	.13
NITROGEN :	17	ATP :	.08	NITRATE :	.30
				SILICATE :	.89

AZORES 1982

STATION NO. 18 WHOLE SAMPLE DEPTH 75 M
LAT 39 0.0'N LONG 44 41.0'W DATE 21/07/82

I	P	I	P	I	P	I	P
227	.15	191	.16	175	.24	147	.25
123	.30	111	.34	96	.36	87	.36
76	.36	67	.41	57	.40	53	.36
48	.50	47	.48	43	.47	39	.42
31	.47	26	.46	25	.48	19	.47
19	.46	14	.34	13	.36	10	.34
10	.40	7	.27	7	.38	6	.25
5	.24	4	.19	4	.18	3	.15
3	.12	2	.10	2	.09	2	.08
2	.06	1	.02	1	.04	1	.05

PARAMETER VALUES

PS :	.61	ALPHA :	.051	BETA :	.0037
(.57,	.64)	(.048,	.054)	(.0031,	.0043)

SAMPLE TEMPERATURE 19.4 C INCUBATION TEMPERATURE 18.0 C

CHLOROPHYLL :	.59	RNA :	3.50	PROTEIN :	77.60
CARBON :	88	DNA :	2.84	PHOSPHATE :	.25
NITROGEN :	22	ATP :	.30	NITRATE :	1.89
				SILICATE :	1.45

AZORES 1982

STATION NO. 18 >1U FRACTION DEPTH 75 M
LAT 38 0.0'N LONG 44 41.0'W DATE 21/07/82

I	P	I	P	I	P	I	P
235	.23	203	.27	203	.22	155	.28
131	.29	123	.35	88	.36	86	.31
68	.36	60	.38	48	.35	46	.37
44	.38	36	.40	33	.40	26	.36
25	.35	20	.35	18	.37	15	.33
13	.28	11	.26	10	.24	8	.23
7	.29	6	.18	5	.24	4	.13
4	.12	3	.13	3	.13	3	.07
2	.10	2	.07	2	.05	1	.06
1	.06	1	.05				

PARAMETER VALUES

PS :	.44	ALPHA :	.040	BETA :	.0012
(.42,	.46)	(.038,	.042)	(.0010,	.0014)

SAMPLE TEMPERATURE 19.4 C INCUBATION TEMPERATURE 18.0 C

CHLOROPHYLL :	.39	RNA :	-	PROTEIN :	-
CARBON :	-	DNA :	-	PHOSPHATE :	.25
NITROGEN :	-	ATP :	.12	NITRATE :	1.89
				SILICATE :	1.45

AZORES 1982

STATION NO. 18 <1U FRACTION DEPTH 75 M
LAT 38 0.0'N LONG 44 41.0'W DATE 21/07/82

I	P	I	P	I	P	I	P
235	.08	203	.19	203	.11	155	.29
131	.36	123	.41	104	.50	88	.58
86	.49	68	.66	65	.58	60	.57
48	.58	46	.66	44	.71	36	.78
33	.75	26	.72	25	.77	20	.76
18	.78	15	.65	13	.63	11	.57
10	.65	8	.58	7	.60	6	.42
5	.47	4	.35	4	.32	3	.29
3	.32	3	.20	2	.28	2	.20
2	.18	1	.19	1	.13	1	.06

PARAMETER VALUES

PS :	ALPHA :	BETA :
1.02	.101	.0083
(.97, 1.07)	(.095, .106)	(.0072, .0094)

SAMPLE TEMPERATURE 19.4 C INCUBATION TEMPERATURE 18.0 C

CHLOROPHYLL :	.27	RNA :	2.30	PROTEIN :	43.70
CARBON :	43	DNA :	.73	PHOSPHATE :	.25
NITROGEN :	11	ATP :	.02	NITRATE :	1.89
				SILICATE :	1.45

AZORES 1982

STATION NO. 18 <1U PREFRACTIONED DEPTH 75 M
LAT 38 0.0'N LONG 44 41.0'W DATE 21/07/82

I	P	I	P	I	P	I	P
203	.02	175	.09	155	.12	135	.19
123	.17	92	.23	82	.20	78	.21
66	.21	59	.26	57	.21	48	.23
46	.28	43	.29	36	.34	33	.30
26	.37	26	.34	19	.36	14	.34
13	.39	10	.41	9	.39	8	.37
7	.29	6	.30	6	.26	4	.21
4	.30	3	.25	2	.22	2	.16
2	.10	2	.10	2	.13	1	.18
1	.08	1	.05				

PARAMETER VALUES

PS :	ALPHA :	BETA :
.45	.083	.0041
(.42, .47)	(.076, .090)	(.0034, .0049)

SAMPLE TEMPERATURE 19.4 C INCUBATION TEMPERATURE 17.8 C

CHLOROPHYLL	: .27	RNA	: 2.30	PROTEIN	: 43.70
CARBON	: 43	DNA	: .73	PHOSPHATE	: .25
NITROGEN	: 11	ATP	: .02	NITRATE	: 1.89
				SILICATE	: 1.45

AZORES 1982

STATION NO. 19 WHOLE SAMPLE DEPTH 80 M
LAT 38 9.0'N LONG 45 13.0'W DATE 22/07/82

I	P	I	P	I	P	I	P
203	.29	175	.46	155	.40	135	.44
123	.48	107	.59	92	.64	82	.61
78	.65	59	.68	57	.72	48	.83
46	.72	43	.73	36	.86	33	.79
26	.88	19	.82	18	.69	14	.60
13	.71	10	.61	9	.68	8	.48
7	.41	6	.38	6	.52	4	.22
4	.44	3	.39	2	.26	2	.29
2	.13	2	.20	2	.16	1	.24
1	.17	1	.15				

PARAMETER VALUES

PS :	1.01	ALPHA :	.096	BETA :	.0057
(	.96, 1.07)	(	.090, .101)	(	.0047, .0067)

SAMPLE TEMPERATURE 17.5 C INCUBATION TEMPERATURE 18.0 C

CHLOROPHYLL :	.53	RNA :	4.93	PROTEIN :	92.00
CARBON :	132	DNA :	1.80	PHOSPHATE :	.11
NITROGEN :	25	ATP :	.22	NITRATE :	.90
				SILICATE :	1.33

AZORES 1982

STATION NO. 19 >1U FRACTION DEPTH 80 M
LAT 38 9.0'N LONG 45 13.0'W DATE 22/07/81

I	P	I	P	I	P	I	P
207	.18	187	.20	167	.26	139	.28
119	.30	109	.29	105	.34	99	.33
81	.41	79	.42	73	.41	65	.45
59	.41	51	.44	49	.41	37	.44
33	.47	28	.44	22	.48	15	.48
14	.43	11	.39	10	.46	10	.41
7	.28	7	.34	5	.47	5	.30
4	.17	4	.23	3	.20	3	.11
2	.14	2	.12	2	.20	2	.10
2	.07	2	.06	1	.03		

PARAMETER VALUES

PS :	ALPHA :	BETA :
.58	.068	.0031
(.55, .62)	(.063, .074)	(.0025, .0037)

SAMPLE TEMPERATURE 18.5 C INCUBATION TEMPERATURE 17.8 C

CHLOROPHYLL :	.28	RNA :	-	PROTEIN :	-
CARBON :	-	DNA :	-	PHOSPHATE :	.11
NITROGEN :	-	ATP :	.14	NITRATE :	.90
				SILICATE :	1.33

AZORES 1982

STATION NO. 19 <10 FRACTION DEPTH 80 M
LAT 38 9.0'N LONG 45 13.0'W DATE 22/07/81

I	P	I	P	I	P	I	P
187	.00	167	.04	139	.13	119	.13
109	.18	105	.32	99	.21	81	.37
79	.29	73	.43	65	.38	59	.40
49	.44	37	.51	33	.53	28	.46
22	.58	19	.59	15	.54	14	.51
11	.56	10	.52	10	.46	7	.43
7	.38	5	.46	5	.33	4	.33
4	.35	3	.34	3	.30	2	.27
2	.28	2	.21	2	.18	2	.14
2	.15	1	.10				

PARAMETER VALUES

PS :	ALPHA :	BETA :
.78	.101	.0093
(.73, .84)	(.094, .107)	(.0078, .0107)

SAMPLE TEMPERATURE 18.5 C INCUBATION TEMPERATURE 17.8 C

CHLOROPHYLL :	.23	RNA :	2.65	PROTEIN :	37.70
CARBON :	45	DNA :	.12	PHOSPHATE :	.11
NITROGEN :	16	ATP :	.09	NITRATE :	.90
				SILICATE :	1.33

AZORES 1982

STATION NO. 19 <1U PREFRACTIONED DEPTH 80 M
LAT 38 9.0'N LONG 45 13.0'W DATE 22/07/82

I	P	I	P	I	P	I	P
175	.13	155	.08	135	.24	123	.09
107	.04	92	.11	82	.29	78	.17
66	.16	59	.14	57	.09	48	.15
46	.13	43	.15	36	.24	33	.33
26	.24	26	.22	19	.42	18	.36
14	.19	13	.22	10	.26	9	.27
8	.12	7	.26	6	.14	6	.17
4	.15	4	.21	3	.18	2	.32
2	.14	2	.15	2	.11	2	.05
1	.08	1	.14	1	.15		

PARAMETER VALUES

PS :	ALPHA :	BETA :
.28	.071	.0020
(.25, .32)	(.054, .088)	(.0011, .0030)

SAMPLE TEMPERATURE 18.5 C INCUBATION TEMPERATURE 18.0 C

CHLOROPHYLL :	.23	RNA :	2.65	PROTEIN :	37.70
CARBON :	45	DNA :	.12	PHOSPHATE :	.11
NITROGEN :	16	ATP :	.09	NITRATE :	.90
				SILICATE :	1.33

AZORES 1982

STATION NO. 20 WHOLE SAMPLE DEPTH 0 M
LAT 39 7.1'N LONG 50 53.0'W DATE 23/07/82

I	P	I	P	I	P	I	P
590	5.49	546	5.28	526	5.58	482	6.01
426	6.54	330	5.98	306	6.34	299	6.26
235	6.05	219	4.54	191	4.46	159	4.17
147	3.86	123	4.55	107	3.26	100	3.44
86	4.79	85	2.73	75	1.94	68	1.54
57	2.98	54	1.29	45	1.14	38	.70
34	1.45	27	.35	20	.67	18	.39
9	.20	8	.07	7	.01		

PARAMETER VALUES

PM : 6.08 ALPHA : .041

(5.42, 6.74) (.029, .053)

SAMPLE TEMPERATURE 25.5 C INCUBATION TEMPERATURE 24.0 C

CHLOROPHYLL	: .09	RNA	: 2.69	PROTEIN	: 24.30
CARBON	: 63	DNA	: 1.20	PHOSPHATE	: .23
NITROGEN	: 19	ATP	: .11	NITRATE	: .14
				SILICATE	: .75

AZORES 1982

STATION NO. 21 WHOLE SAMPLE DEPTH 0 M
LAT 39 27.3'N LONG 52 21.7'W DATE 23/07/82

I	P	I	P	I	P	I	P
617	5.98	598	6.99	526	5.84	458	7.22
390	6.73	346	6.41	330	5.31	310	6.96
251	4.49	231	5.51	203	5.31	171	4.46
147	4.71	143	2.93	115	2.69	104	3.54
99	2.77	83	2.49	74	1.84	65	3.30
57	3.05	51	1.29	37	1.11	24	.51
18	.44	13	.36	7	.26	6	.28
3	.28	3	.30				

PARAMETER VALUES

PM : 6.69 ALPHA : .031

(5.93, 7.46) (.023, .039)

SAMPLE TEMPERATURE 25.0 C INCUBATION TEMPERATURE 26.0 C

CHLOROPHYLL	: .12	RNA	: 2.68	PROTEIN	: 25.70
CARBON	: 120	DNA	: 1.89	PHOSPHATE	: .20
NITROGEN	: 29	ATP	: .18	NITRATE	: .34
				SILICATE	: 1.22

AZORES 1982

STATION NO. 22 WHOLE SAMPLE DEPTH 0 M
LAT 40 20.0'N LONG 58 22.3'W DATE 24/07/82

I	P	I	P	I	P	I	P
598	8.22	530	9.12	510	8.61	466	8.36
406	8.24	354	9.01	330	8.27	299	8.20
247	7.33	239	7.36	203	6.82	175	6.32
155	5.46	139	5.70	123	5.42	103	4.49
96	4.22	91	3.91	79	4.13	67	2.65
66	3.34	57	2.72	49	1.79	43	1.49
37	1.51	29	1.03	28	.98	20	.68
20	.69	13	.40	12	.29	11	.28
10	.22	7	.19	6	.18	5	.13
4	.15						

PARAMETER VALUES

PM : 8.73 ALPHA : .052

(8.30, 9.17) (.046, .059)

SAMPLE TEMPERATURE 25.0 C INCUBATION TEMPERATURE 25.0 C

CHLOROPHYLL	: .24	RNA	: 3.04	PROTEIN	: 59.20
CARBON	: 87	DNA	: 3.49	PHOSPHATE	: .68
NITROGEN	: 20	ATP	: .30	NITRATE	: .38
				SILICATE	: .23

AZORES 1982

STATION NO. 23 WHOLE SAMPLE DEPTH 60 M
LAT 41 58.0'N LONG 60 40.9'W DATE 25/07/82

I	P	I	P	I	P	I	P
326	.17	275	.27	219	.51	211	.42
191	.52	151	.83	135	.79	135	.70
99	1.01	95	.93	73	1.06	71	.97
67	.99	55	.99	45	.96	41	1.03
35	.97	30	1.03	26	.97	24	.81
19	.86	17	1.01	15	.93	13	.72
10	.82	10	.66	7	.52	7	.57
6	.37	5	.36	4	.32	4	.25
3	.29	3	.30	2	.18	2	.16
2	.15	2	.20	2	.21		

PARAMETER VALUES

PS :	ALPHA :	BETA :
1.43	.086	.0072
(1.35, 1.52)	(.081, .091)	(.0061, .0083)

SAMPLE TEMPERATURE 17.2 C INCUBATION TEMPERATURE 17.8 C

CHLOROPHYLL :	1.09	RNA :	5.34	PROTEIN :	128.20
CARBON :	228	DNA :	5.11	PHOSPHATE :	1.13
NITROGEN :	81	ATP :	.41	NITRATE :	2.16
				SILICATE :	3.19

AZORES 1982

STATION NO. 23 >1U FRACTION DEPTH 60 M
LAT 41 58.0'N LONG 60 40.9'W DATE 25/07/82

I	P	I	P	I	P	I	P
346	.24	310	.38	251	.52	231	.45
211	.53	171	.75	151	.81	139	.69
123	.90	107	.80	99	.84	87	.81
71	1.07	65	.99	61	1.02	51	1.05
47	1.01	38	.91	34	1.11	28	1.02
27	.64	19	.84	19	.79	15	.67
14	.73	11	.55	11	.68	9	.47
9	.48	7	.38	7	.32	5	.25
5	.28	4	.22	4	.20	3	.13
3	.15	2	.12	2	.08	1	.06

PARAMETER VALUES

PS : 1.44 ALPHA : .066 BETA : .0065

(1.35, 1.52) (.062, .069) (.0055, .0075)

SAMPLE TEMPERATURE 17.2 C INCUBATION TEMPERATURE 17.5 C

CHLOROPHYLL : .73 RNA : - PROTEIN : -

CARBON : - DNA : - PHOSPHATE : 1.13

NITROGEN : - ATP : .13 NITRATE : 2.16

SILICATE : 3.19

AZORES 1982

STATION NO. 23 <1U FRACTION DEPTH 60 M
LAT 41 58.0'N LONG 60 39.9'W DATE 25/07/82

I	P	I	P	I	P	I	P
346	.11	310	.12	251	.12	231	.16
211	.10	171	.23	151	.35	139	.20
123	.34	107	.25	99	.32	87	.30
71	.38	65	.46	61	.52	51	.48
47	.41	34	.43	28	.59	27	.38
19	.51	19	.46	15	.57	14	.45
11	.31	11	.40	9	.37	9	.39
7	.24	7	.19	5	.22	5	.21
4	.11	4	.18	3	.06	3	.25
2	.23	2	.19	1	.07		

PARAMETER VALUES

PS : .65 ALPHA : .055 BETA : .0042

(.58, .71) (.049, .060) (.0032, .0053)

SAMPLE TEMPERATURE 17.2 C INCUBATION TEMPERATURE 17.5 C

CHLOROPHYLL	: .28	RNA	: 3.35	PROTEIN	: 17.90
CARBON	: 57	DNA	: 2.00	PHOSPHATE	: 1.13
NITROGEN	: 17	ATP	: .19	NITRATE	: 2.16
				SILICATE	: 3.19

Temperature and Salinity Profiles

Date 09:07:82 Station No. 4

Lat 36°24.75'N Long 33°48.9'W

Depth m	Temperature °C	Salinity 0°/..
2.6	22.31	36.30
20	22.00	36.34
40	21.12	36.29
60	18.00	36.25
80	17.03	36.20
100	16.57	36.20
125	16.06	36.16
150	15.61	36.11
175	15.07	36.03
200	14.60	35.96

Date 10:07:82 Station No. 5

Lat 36°23.8'N Long 33°47.9'W

Depth m	Temperature °C	Salinity 0°/..
2.5	22.50	36.10
20	21.90	36.27
40	20.20	36.26
60	18.48	36.25
80	17.20	36.23
100	16.45	36.17
125	16.08	36.14
150	15.65	36.09
175	15.01	36.02
200	14.53	35.93

Date 12:07:82 Station No. 8

Lat 36°25'N Long 33°49'W

Depth m	Temperature °C	Salinity 0°/₀₀
3.3	22.40	36.34
20	20.24	36.28
40	18.61	36.25
60	17.84	36.23
80	17.15	36.21
100	16.61	36.21
125	16.38	36.18
150	15.83	36.14
175	15.39	36.09
200	14.99	36.03

Date 14:07:82 Station No. 10

Lat 36°22.6'N Long 33°44.6'W

Depth m	Temperature °C	Salinity 0°/₀₀
2.0	22.16	36.38
20	20.53	36.24
40	18.75	36.23
60	17.59	36.21
80	17.12	36.19
100	16.75	36.19
125	15.91	36.12
150	15.66	36.10
175	15.12	36.04
200	15.06	35.94

Date 15:07:82 Station No. 11

Lat 36°25'N Long 33°15'W

Depth m	Temperature °C	Salinity 0°/₀₀
2.0	22.42	36.12
20	20.83	36.35
40	18.80	36.29
60	17.84	36.30
80	17.08	36.28
100	16.69	36.26
125	16.29	36.21
150	16.06	36.17
175	15.75	36.13
200	15.23	36.05

Date 16:07:82 Station No. 12

Lat 36°25'N Long 34°15'W

Depth m	Temperature °C	Salinity 0°/₀₀
2.2	22.03	36.29
20	19.82	36.19
40	17.93	36.20
60	16.86	36.20
80	16.21	36.21
100	15.96	36.21
125	15.51	36.14
150	15.15	36.11
175	14.85	36.06
200	14.69	36.04

Date 18:07:82 Station No. 13

Lat 36°25.6'N Long 33°52.3'W

Depth m	Temperature °C	Salinity 0°/₀₀
2.0	22.34	36.35
20	21.63	36.34
40	19.00	36.26
60	18.00	36.23
80	16.98	36.21
100	16.67	36.27
125	16.02	36.19
150	15.75	36.16
175	15.63	36.16
200	15.23	36.07

Date 17:07:82 Station No. 14

Lat 36°25'N Long 33°30'N

Depth m	Temperature °C	Salinity 0°/₀₀
2.4	22.87	36.36
20	20.53	36.26
40	18.75	36.27
60	17.70	36.25
80	17.05	36.29
100	16.62	36.25
125	16.25	36.20
150	15.92	36.14
175	15.75	36.13
200	15.32	36.06

Date 19:07:82 Station No. 15

Lat 36°00'N Long 34°12'W

Depth m	Temperature °C	Salinity 0°/..
2.1	22.07	36.32
20	21.83	36.31
40	19.36	36.36
60	17.57	36.39
80	17.20	36.39
100	16.94	36.36
125	16.70	36.33
150	16.50	36.31
175	16.22	36.25
200	15.97	36.22

Date 19:07:82 Station No. 16

Lat 36°25'N Long 34°15'W

Depth m	Temperature °C	Salinity 0°/..
3.1	21.79	36.20
20	20.19	36.29
40	17.74	36.33
60	17.14	36.36
80	16.77	36.32
100	16.40	36.28
125	16.06	36.23
150	15.72	36.18
175	15.51	36.14
200	15.03	36.07

Date 25:07:82 Station No. 23

Lat 41°58'N Long 60°40.9'W

Depth m	Temperature °C	Salinity 0°/₀₀
2.6	22.14	34.94
20	22.70	35.28
40	19.82	35.62
60	16.56	35.45
80	16.12	35.80
100	16.03	35.63
125	13.69	35.64
150	13.08	35.57
175	13.03	35.60
200	13.03	35.63

Fluoresence and DCMU Ratios

Lat.: 36°29.2'N Long.: 32°42.5'W

Date: 08:07:82	Station No. 1	Sample depth: 0m

Fraction: - Whole

Fluoresence	+ DCMU
3.50	4.60
3.40	4.60
3.30	4.90
3.60	4.90
3.90	4.80
$\overline{X}$ 3.54	$\overline{X}$ 4.76
DCMU Ratio	0.26

Lat.: 36°25.4'N Long.: 33°55'W

Date: 08:07:82	Station No. 2	Sample depth: 70 m

Fraction: - Whole

Fluoresence	+ DCMU
8.06	9.16
8.22	10.43
8.22	10.74
8.53	10.43
9.16	9.16
$\overline{X}$ 8.44	$\overline{X}$ 9.99
DCMU Ratio	0.16

Lat.: 36°25.4'N Long.: 33°55'W

Date: 09:07:82	Station No. 3	Sample depth: 65 m

Fraction: - Whole

Fluoresence	+ DCMU
12.32	16.43
14.54	17.06
14.22	17.70
13.59	16.12
12.01	15.48
$\overline{X}$ 13.34	$\overline{X}$ 16.56
DCMU Ratio	0.19

Lat.: 36°24.75'N Long.: 33°48.9'W

Date: 09:07:82 Station No. 4 Sample depth: 70 m

Fraction: - Whole

Fluoresence	+ DCMU
8.53	11.38
8.37	10.74
7.90	10.43
7.90	10.43
7.58	10.11
$\overline{X}$ 8.06	$\overline{X}$ 10.62
DCMU Ratio	0.24

Fraction: - Whole [stored 12 hours in the dark]

Fluoresence	+DCMU	0.2 µm FSW Blank
5.50	6.10	2.60
4.95	7.60	1.70
5.40	7.40	2.10
4.40	6.10	2.10
4.90	6.70	
4.70		
5.00		
$\overline{X}$ 4.98	$\overline{X}$ 6.78	$\overline{X}$ 2.13
DCMU Ratio	0.39	

Lat.: 36°22.1'N Long.: 33°48.5'W

Date: 11:07:82	Station No. 7	Sample depth: 75 m

Fraction: - Whole

Fluoresence	+ DCMU	0.2 µm FSW Blank
4.10	8.90	1.50
4.30	8.10	2.70
4.60	6.50	1.60
4.50	7.30	1.80
4.65	7.20	2.10
	7.60	
$\overline{X}$ 4.43	$\overline{X}$ 7.60	$\overline{X}$ 1.94
DCMU Ratio	0.57	

Fraction: - <1 µm

Fluoresence	+DCMU	0.2 µm FSW Blank
3.40	3.00	1.50
2.60	3.40	2.70
2.80	3.60	1.60
2.50	2.95	1.80
3.40	2.95	2.10
3.10	3.30	
2.90		
$\overline{X}$ 2.96	$\overline{X}$ 3.20	$\overline{X}$ 1.94
DCMU Ratio	0.19	

Lat.: 36°25'N Long.: 33°49'W

Date: 12:07:82	Station No. 8	Sample depth: 0 m

Fraction: - Whole

Fluoresence	+ DCMU	0.2 µm FSW Blank
2.30	4.30	1.75
2.40	4.30	2.00
2.55	3.95	1.90
2.50	3.00	2.10
2.60	2.90	2.30
	2.30	
	4.40	
$\overline{X}$ 2.47	$\overline{X}$ 3.63	$\overline{X}$ 2.01
DCMU Ratio	0.72	

Lat.: 36°25'N Long.: 33°49'W

Date: 12:07:82	Station No. 8	Sample depth: 2 m

Fraction: - Whole

Fluoresence	+DCMU	0.2 µm FSW Blank
3.10	3.40	1.75
3.30	2.95	2.00
3.30	3.50	1.90
2.90	3.60	2.10
2.80	3.75	2.30
$\overline{X}$ 3.08	$\overline{X}$ 3.44	$\overline{X}$ 2.01
DCMU Ratio	0.25	

Lat.: 36°25'N Long.: 33°49'W

Date: 12:07:82	Station No. 8	Sample depth: 87 m
Fraction: - Whole		
Fluoresence	+ DCMU	0.2 µm FSW Blank
12.64	20.86	1.75
13.59	18.96	2.00
14.22	20.38	1.90
13.59	20.54	2.10
14.22	20.86	2.30
$\overline{X}$ 13.66	$\overline{X}$ 20.32	$\overline{X}$ 2.01
DCMU Ratio	0.36	

Lat.: 36°25'N Long.: 33°49'W

Date: 12:07:82	Station No. 8	Sample depth: 87 m
Fraction: - <1 µm		
Fluoresence	+DCMU	0.2 µm FSW Blank
5.1	8.2	1.75
5.7	7.5	2.00
5.5	7.5	1.90
5.1	6.7	2.10
5.2	6.9	2.30
	6.9	
$\overline{X}$ 5.32	$\overline{X}$ 7.28	$\overline{X}$ 2.01
DCMU Ratio	0.37	

Lat.: 36°45'N Long.: 33°17'W

Date: 13:07:82	Station No. 9	Sample depth: 75 m

Fraction: - Whole

Fluoresence	+ DCMU	0.2 µm FSW Blank
13.90	18.64	2.7
14.54	19.28	2.8
13.59	19.28	2.7
13.27	18.33	2.8
13.59	18.3	2.4
$\overline{X}$ 13.78	$\overline{X}$ 18.77	$\overline{X}$ 2.68
DCMU Ratio	0.31	

Fraction: - <1 µm

Fluoresence	+DCMU	0.2 µm FSW Blank
6.3	8.3	2.7
6.5	8.2	2.8
6.3	7.5	2.7
6.1	7.7	2.8
5.9	8.2	2.4
$\overline{X}$ 6.22	$\overline{X}$ 7.98	$\overline{X}$ 2.68
DCMU Ratio	0.33	

Lat.: 36°22.6'N Long.: 33°44.6'W

Date: 14:07:82	Station No. 10	Sample depth: 28 m

Fraction: - Whole

Fluoresence	+ DCMU	0.2 µm FSW Blank
1.6	5.4	1.1
2.1	6.0	1.0
2.0	5.9	1.1
2.0	5.8	
	4.8	
$\overline{X}$ 1.93	$\overline{X}$ 5.58	$\overline{X}$ 1.07
DCMU Ratio	0.81	

Lat.: 36°22.6'N Long.: 33°44.6'W

Date: 14:07:82	Station No. 10	Sample depth: 87 m

Fraction: - Whole

Fluoresence	+DCMU	0.2 µm FSW Blank
10.74	19.28	1.1
10.59	18.96	1.0
10.47	18.64	1.1
10.74	18.64	
10.74	18.64	
$\overline{X}$ 10.65	$\overline{X}$ 18.83	$\overline{X}$ 1.07
DCMU Ratio	0.46	

Lat.: 36°22.6'N Long.: 33°44.6'W

Date: 14:07:82	Station No. 10	Sample depth: 78 m

Fraction: - <1 µm

Fluoresence	+ DCMU	0.2 µm FSW Blank
4.8	6.8	1.1
4.5	6.7	1.0
4.8	6.7	1.1
$\overline{X}$ 4.73	$\overline{X}$ 6.73	$\overline{X}$ 1.07
DCMU Ratio	0.35	

Lat.: 36°25'N Long.: 33°15'W

Date: 15:07:82	Station No. 11	Sample depth: 84 m

Fraction: - Whole

Fluoresence	+DCMU	0.2 µm FSW Blank
13.90	24.96	1.5
13.90	24.96	1.3
14.54	24.96	1.2
$\overline{X}$ 14.13	$\overline{X}$ 24.96	$\overline{X}$ 1.33
DCMU Ratio	0.46	

Lat.: 36°25'N Long.: 33°15'W

Date: 15:07:82	Station No. 11	Sample depth: 84 m

Fraction: - <1 µm

Fluoresence	+ DCMU	0.2 µm FSW Blank
8.22	12.01	1.5
7.90	12.01	1.3
7.90	11.69	1.2
$\overline{X}$ 7.99	$\overline{X}$ 11.91	$\overline{X}$ 1.33
DCMU Ratio	0.36	

Lat.: 36°25'N Long.: 34°15'W

Date: 16:07:82	Station No. 12	Sample depth: 68 m

Fraction: - Whole

Fluoresence	+DCMU	0.2 µm FSW Blank
19.0	38.0	0.4
19.0	39.0	0.7
19.0	40.0	0.5
$\overline{X}$ 19.0	$\overline{X}$ 39.0	$\overline{X}$ 0.53
DCMU Ratio	0.52	

Lat.: 36°25'N Long.: 34°15'W

Date: 16:07:82	Station No. 12	Sample depth: 68 m

Fraction: - <1 µm

Fluoresence	+ DCMU	0.2 µm FSW Blank
8.85	13.27	0.4
9.16	13.59	0.7
8.85	13.27	0.5
$\overline{X}$ 8.94	$\overline{X}$ 13.37	$\overline{X}$ 0.53
DCMU Ratio	0.35	

Lat.: 36°25.6'N Long.: 33°52.3'W

Date: 17:07:82	Station No. 13	Sample depth: 87 m

Fraction: - Whole

Fluoresence	+DCMU	0.2 µm FSW Blank
12.48	27.81	1.8
13.90	27.18	1.7
13.90	28.44	1.6
$\overline{X}$ 13.43	$\overline{X}$ 27.81	$\overline{X}$ 1.7
DCMU Ratio	0.55	

Lat.: 36°25.6'N Long.: 33°52.3'W

Date: 17:07:82	Station No. 13	Sample depth: 87 m

Fraction: - <1 µm

Fluoresence	+ DCMU	0.2 µm FSW Blank
6.0	8.3	1.8
6.0	8.0	1.7
6.1	8.2	1.6
$\overline{X}$ 6.03	$\overline{X}$ 8.17	$\overline{X}$ 1.7
DCMU Ratio	0.33	

Lat.: 36°25'N Long.: 33°30'W

Date: 17:07:82	Station No. 14	Sample depth: 78 m

Fraction: - Whole

Fluoresence	+DCMU	0.2 µm FSW Blank
10.11	16.12	1.1
10.43	15.80	1.8
10.11	16.43	1.2
$\overline{X}$ 10.21	$\overline{X}$ 16.12	$\overline{X}$ 1.37
DCMU Ratio	0.40	

Lat.: 36°25'N Long.: 33°30'W

Date: 17:07:82	Station No. 14	Sample depth: 78 m

Fraction: - <1 µm

Fluoresence	+ DCMU	0.2 µm FSW Blank
3.7	5.6	1.1
4.1	5.3	1.8
3.9	5.1	1.2
$\overline{X}$ 3.90	$\overline{X}$ 5.33	$\overline{X}$ 1.37
DCMU Ratio	0.36	

Lat.: 36°00'N Long.: 34°12'W

Date: 19:07:82	Station No. 15	Sample depth: 73 m

Fraction: - Whole

Fluoresence	+DCMU	0.2 µm FSW Blank
16.12	30.97	1.5
15.80	30.65	1.4
15.48	30.34	1.4
	31.28	
$\overline{X}$ 15.80	$\overline{X}$ 30.81	$\overline{X}$ 1.43
DCMU Ratio	0.51	

Lat.: 36°00'N Long.: 34°12'W

Date: 19:07:82	Station No. 15	Sample depth: 73 m

Fraction: - <1 µm

Fluoresence	+ DCMU	0.2 µm FSW Blank
6.95	10.43	1.5
6.95	10.74	1.4
6.95	10.11	1.4
$\overline{X}$ 6.95	$\overline{X}$ 10.43	$\overline{X}$ 1.43
DCMU Ratio	0.39	

Lat.: 36°25'N Long.: 34°15'W

Date: 19:07:82	Station No. 16	Sample depth: 61 m

Fraction: - Whole

Fluoresence	+DCMU	0.2 µm FSW Blank
16.0	34.0	1.5
15.0	35.0	1.4
14.0	34.0	1.4
$\overline{X}$ 15.0	$\overline{X}$ 34.3	$\overline{X}$ 1.43
DCMU Ratio	0.59	

Lat.: 37°10'N Long.: 38°41'W

Date: 20:07:82	Station No. 17	Sample depth: 87 m

Fraction: - Whole

Fluoresence	+ DCMU	0.2 µm FSW Blank
10.74	23.70	1.6
10.11	24.33	1.5
10.43	23.70	1.5
$\overline{X}$ 10.43	$\overline{X}$ 24.11	$\overline{X}$ 1.53
DCMU Ratio	0.61	

Lat.: 37°10'N Long.: 38°41'W

Date: 20:07:82	Station No. 17	Sample depth: 87 m

Fraction: - <1 µm

Fluoresence	+DCMU	0.2 µm FSW Blank
6.64	11.69	1.6
6.64	11.69	1.5
6.64	11.38	1.5
$\overline{X}$ 6.64	$\overline{X}$ 11.60	$\overline{X}$ 1.53
DCMU Ratio	0.49	

Lat.: 38°00'N Long.: 44°41'W

Date: 21:07:82	Station No. 18	Sample depth: 75 m

Fraction: - Whole

Fluoresence	+ DCMU	0.2 µm FSW Blank
11.06	27.49	1.2
10.43	26.54	1.0
10.74	26.54	1.1
$\overline{X}$ 10.74	$\overline{X}$ 26.86	$\overline{X}$ 1.1
DCMU Ratio	0.63	

Lat.: 38°00'N Long.: 44°41'W

Date: 21:07:82	Station No. 18	Sample depth: 75 m

Fraction: - <1 µm

Fluoresence	+DCMU	0.2 µm FSW Blank
8.22	10.74	1.2
7.90	11.06	1.0
8.22	11.06	1.1
$\overline{X}$ 8.12	$\overline{X}$ 10.97	$\overline{X}$ 1.1
DCMU Ratio	0.29	

Lat.: 38°09'N Long.: 45°13'W

Date: 22:07:82	Station No. 19	Sample depth: 80 m

Fraction: - Whole

Fluoresence	+ DCMU	0.2 µm FSW Blank
10.27	26.86	1.7
11.69	24.96	1.4
10.74	25.28	1.5
10.74		
$\overline{X}$ 10.87	$\overline{X}$ 25.69	$\overline{X}$ 1.53
DCMU Ratio	0.61	

Lat.: 38°09'N Long.: 45°13'W

Date: 22:07:82	Station No. 19	Sample depth: 80 m

Fraction: - <1 µm

Fluoresence	+DCMU	0.2 µm FSW Blank
6.32	11.38	1.7
6.48	11.38	1.4
6.32	11.38	1.5
$\overline{X}$ 6.38	$\overline{X}$ 11.38	$\overline{X}$ 1.53
DCMU Ratio	0.51	

Lat.: 39°07.1'N Long.: 50°53'W

Date: 23:07:82	Station No. 20	Sample depth: 0 m

Fraction: - Whole

Fluoresence	+ DCMU	0.2 µm FSW Blank
1.5	2.8	0.9
1.3	2.8	1.1
1.4	3.9	1.0
	3.1	
$\overline{X}$ 1.4	$\overline{X}$ 3.15	$\overline{X}$ 1.0
DCMU Ratio	0.81	

Lat.: 39°27.3'N Long.: 52°21.7'W

Date: 23:07:82	Station No. 21	Sample depth: 0 m

Fraction: - Whole

Fluoresence	+DCMU	0.2 µm FSW Blank
1.6	3.3	0.9
1.4	3.3	0.9
1.0	3.6	0.9
1.1		
1.0		
$\overline{X}$ 1.22	$\overline{X}$ 3.4	$\overline{X}$ 0.9
DCMU Ratio	0.87	

Lat.: 40°20'N Long.: 58°22.3'W

Date: 24:07:82	Station No. 22	Sample depth: 0 m

Fraction: - Whole

Fluoresence	+ DCMU	0.2 µm FSW Blank
2.2	5.5	0.9
2.3	5.8	0.8
2.3	6.1	
	6.2	
$\overline{X}$ 2.27	$\overline{X}$ 5.90	$\overline{X}$ 0.85
DCMU Ratio	0.72	

Lat.: 41°58'N Long.: 60°40.9'W

Date: 25:07:82	Station No. 23	Sample depth: 60 m

Fraction: - Whole

Fluoresence	+DCMU	0.2 µm FSW Blank
16.0	39.0	0.7
18.0	42.0	0.8
16.0	38.0	0.7
17.0		
$\overline{X}$ 16.7	$\overline{X}$ 39.7	$\overline{X}$ 0.73
DCMU Ratio	0.59	

Lat.: 41°58'N Long.: 60°40.9'W

Date: 25:07:82	Station No. 23	Sample depth: 60 m

Fraction: - <1 µm

Fluoresence	+ DCMU	0.2 µm FSW Blank
8.22	11.38	0.7
8.22	11.06	0.8
7.58	11.06	0.7
$\overline{X}$ 7.99	$\overline{X}$ 11.15	$\overline{X}$ 0.73
DCMU Ratio	0.30	

Total Surface Radiation in Watts in $^{-2}$

All times are Atlantic Daylight Saving Time.

Note: Ships time was ADT + 3 hours on July 7, ADT + 2 hours from July 8 to July 19, ADT + 1 hour from July 20 to July 22 and ADT from July 23 to July 26.

	7/7	8/7	9/7	10/7	11/7	12/7	13/7	14/7	15/7	16/7	17/7	18/7	19/7	20/7	21/7	22/7	23/7	24/7	25/7	26/7
0400	-	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0500	-	57	26	41	41	17	14	37	6	33	11	21	17	9	2	1	0	0	0	0
0600	-	203	143	139	175	52	69	177	65	138	60	83	89	96	50	42	16	4	2	1
0700	-	353	216	335	304	331	164	349	158	264	95	360	169	213	203	112	87	29	53	19
0800	-	450	485	495	503	392	181	496	240	506	169	512	327	384	340	287	283	96	197	61
0900	-	666	614	674	569	418	480	643	448	663	386	661	497	558	489	524	467	141	223	74
1000	-	757	714	786	770	732	654	738	571	742	506	775	519	579	577	322	603	416	404	161
1100	-	777	714	784	827	803	637	809	676	800	772	815	641	284	522	631	718	469	669	419
1200	-	855	806	729	842	824	652	788	792	804	633	837	411	501	383	778	718	285	727	612
1300	-	819	743	817	738	752	773	717	797	714	549	809	459	628	190	809	763	211	784	631
1400	-	725	664	666	710	711	619	708	724	580	494	732	361	687	280	639	617	132	719	603
1500	-	580	537	583	516	503	604	579	574	535	382	596	239	453	673	360	520	145	567	542
1600	-	442	353	422	356	440	192	397	408	383	203	395	216	241	540	425	373	116	462	467
1700	-	271	223	280	220	174	115	211	174	207	133	248	202	200	352	238	364	220	364	369
1800	35	108	65	106	108	107	56	67	64	57	43	115	46	96	153	216	150	146	239	247
1900	5	8	8	9	11	8	8	5	6	8	3	7	7	25	36	50	73	72	138	133
2000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	5	31	14	61	57
2100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	12